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Effects of the Opening of the Niagara Casino: A First Report¹

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This is a first report of the impacts on the community of the opening of the casino in Niagara Falls in late 1996. In this report we draw primarily on surveys of the adult population of Niagara Falls carried out just before the opening of the casino, and again about a year later. For comparison, we also use data from surveys of the adult population of Ontario as a whole, carried out in early 1995 and late 1997. We examine expectations of community members about the effects of the casino, in comparison with their experience a year later of what has actually happened. We compare the level of involvement of community members in gambling in general, and in casino gambling in particular, before and after the opening of the casino, comparing trends in Niagara Falls with trends in the province as a whole. And we examine changes in rates of several measures of gambling-related problems, both in Niagara Falls and in the province as a whole. Taken together, these comparisons are the most comprehensive view yet of the effects of opening a casino, as seen from the perspective of the quantified experiences, positive and negative, of members of the host community.

BACKGROUND

As the National Council of Welfare (1996) put it, "in less than a generation, gambling has become a multi-billion dollar industry in Canada", as in North America more generally. Before 1970, Ladouceur has noted, "legal gambling in Canada was restricted to occasional charity bingos and raffles, midway games of chance, parimutuel betting on horse races and friendly bets between individuals.... By 1993, legal gambling in Canada had expanded to include slot machines and video gaming devices, casinos, large-scale bingo operations, sports wagering and off-track betting on horse races. Lotteries, bingo and parimutuel wagering are available in every Canadian province; casinos now operate in more than half of the provinces" (Ladouceur, 1996). The increase in the availability of gambling has been fuelled to a large extent by the search by

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various levels of government for new sources of revenue. And gambling has indeed become a major source of governmental revenue, with the result that often "there is no impartial representative of the public's welfare among the various groups that influence the formation of public policy on commercial gambling -- not even government" (McGurrin and Abt, 1992).

In the wake of the increase in the availability and diversity of types of gambling has come a growing awareness that there are problems as well as benefits from gambling. With varying degrees of alacrity or reluctance, Canadian provinces have moved to provide resources to deal with gambling problems (Kinross, 1995; Addiction Research Foundation, 1996). But relatively little attention has been paid in Canada to preventing gambling problems. There has also been little explicit recognition that the pathological gambler is not the only possible negative outcome of gambling -- that there may be problems also at community and other aggregate levels.

In the continuing expansion of gambling availability, Ontario has been somewhere in the middle of the pack among Canadian provinces. In recent years, a number of new forms of gambling have become available in Ontario, including hospital lotteries, charity casinos, and pull-tab tickets. Full-scale casinos came to Ontario in 1994 (Windsor), with three more (Windsor boat; Rama; Niagara) opened in the following years. The government has phased out the floating "charity casinos", which moved around between locations, operating for two or three nights at a time, and announced plans for a system of 44 "neighbourhood gaming clubs", small casinos scattered throughout the province for easy access by Ontarians. Ontario is also somewhere in the middle in making provision for referral and treatment of those with gambling problems -- well behind the prairie provinces in allocations and timing, but ahead of the maritime provinces and British Columbia.

In the wake of the increase in gambling availability has come increasing public unease about the problems it is perceived as causing. To a considerable extent, this public unease has focused on video lottery terminals (VLTs), often described colourfully as "the crack cocaine of gambling". Facing rising resistance to the introduction of VLTs, the Ontario government recently decided instead to introduce slot machines in the province. Community resistance to the introduction of small-scale casinos -- the "neighbourhood gaming clubs" -- has also proved strong; only a few of the many local referenda on their introduction have approved them.

These major social developments -- the expansion of gambling availability, and increasing public resistance to further expansion -- have happened largely in the dark, in terms of the availability of a cumulative tradition of knowledge and experience. Communities have found themselves with a lack of coherent and balanced information for making decisions about whether and how to introduce new forms of gambling, and how to deal with and minimize the new or increased problems the new gambling may bring. Economic models are available for estimating the benefits to the community from the new gambling -- for instance, the Ernst and Young (1994b) model which was applied to estimate the "impact" of opening the casino in Windsor. But such models have been substantially criticized on grounds of basic principles in economics, since they assume that none of the share of the local economy attributable to the casino would otherwise have been devoted to other purposes (Persky, 1995). The Ernst and Young model also does not factor in the extra expenditures which may have to be made in the community because of the casino. In the case of Windsor, for instance, the Ernst and Young report mentions that 25 new police were hired in Windsor and 41 additional customs officers assigned to Windsor border

traffic duty in preparing for the casino (Ernst and Young, 1994a, pp. 2-4, 2-5). But these extra costs for the taxpayer do not figure in the economic impact model.

Furthermore, such models are not balanced with any equivalent accounting of the problems for the community from gambling. Citing a U.S. report, the British Columbia Gaming Policy Review noted that "there is little reliable data about the costs of some impacts such as problem gambling, crime and infrastructure expenditures, and effects on other businesses. Most of the analysis done respecting specific ventures is done by the industry itself and tends to ignore or understate costs." (British Columbia, 1994, p. 14) The Ernst and Young study, for instance, apparently does not consider problems such as crime, employee absenteeism, or pathological gambling to have an economic dimension at all, since they are discussed under the heading "Other Non-Economic Impacts" (p. 5-1). Estimates of the costs of these problems would normally be included, for example, in economic cost studies in the cost-of-illness tradition (Single et al., 1996).

A balanced analysis at the community level also needs to consider impacts of gambling, negative as well as positive, at the collective level. These are often intangible, but may nevertheless be experienced as substantial (Thompson et al., 1993).

Studies of the full range of impacts of gambling at a community level have been few and far between. A series of studies in three Minnesota communities (Aasved and Laudergan, 1993; Aasved and Schaefer, 1992; Aasved et al., 1995) examined the situation in the community after an expansion in gambling, but had no data from before the expansion. Evidence on adverse social impacts was confined to opinions, rumours and clinical anecdotes.

A longitudinal study of a statewide youth sample examined the change in gambling behaviour of 15-18-year-olds with the introduction of a state lottery. The 18-month follow-up study did find an increase in frequency of legal gambling, but this increase was nearly offset by a decline in the frequency of informal, extralegal gambling (Winters et al., 1995). Given the weaknesses in the study design (a non-probability sample, no control group, and with the "before" measurement shortly after the state lottery first functioned), the study's results must be regarded with caution. Another study compared adult gambling frequencies among local residents before and a year after the opening of the first Ontario casino, in Windsor; a preliminary report found no net change (Govoni and Frisch, 1996). Other studies have compared the perceptions of community residents before and after the opening of new casinos in small communities. In general, these studies have found that residents' attitudes were positive before the casino opened, but were less enthusiastic a couple of years later (Caneday and Zeiger, 1991; Stokowski, 1996; Perdue et al., 1995).

METHODS

Using random-digit dialling techniques, a probability sample of the adult population of the Niagara region was interviewed before or around the time of the opening of the Niagara casino in late 1996. A new sample of adult residents of Niagara Falls were interviewed one year later, while at the same time the 1996 respondents were reinterviewed. The present analysis compares responses of residents of Niagara Falls in 1996 with responses of residents in 1997.

In addition, two province-wide surveys were used to compare trends in the province as a whole to those found in the city. These province-wide surveys were repeated cross-sectional



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samples. The analysis thus uses answers from a total of five data-sets.

Samples

(1) A probability sample of 1,002 adults (18 years and older) residing in the Niagara region were interviewed by telephone: 70% in the city of Niagara Falls, 30% in the surrounding region. The interviews were conducted in English, and averaged about 24 minutes in length. The survey was conducted for the Addiction Research Foundation by the Institute for Social Research at York University between November 18 and December 19, 1996. While 93% of the respondents were interviewed prior to the casino's opening, the last 7% of the sample was interviewed in the ten days following the opening date. The survey asked questions about approval of the casino, expectations regarding the impact of the casino on the community, attitudes toward gambling, gambling behaviour in the past 12 months, and demographic and background information. Answers from the 677 residents of Niagara Falls in this sample are used in the present analyses.

(2) In November and December 1997, about a year after the casino opened, 662 of the respondents from the whole Niagara region sample were reinterviewed. This represented a reinterview completion rate of 78% of the eligible respondents (excluding those that could not be reached). The interview schedule repeated most of the questions asked in the first interview, and included some questions specifically about experiences with casino gambling, employment in the casino, questions regarding economic diversion of expenditures and some questions on gambling strategies and knowledge of the odds of winning. The 1997 answers from the 468 respondents resident in Niagara Falls are combined with (3) below as the "after" dataset on Niagara Falls. Longitudinal analysis of the Niagara data will be reported in a later paper. It should be noted that the two 1997 Niagara samples were quite similar in terms of the effects reported here.

(3) A new probability sample of 608 adults resident in the city of Niagara Falls was also interviewed in November/December, 1997. The questionnaire was primarily composed of items asked in component (2) above.

(4) A province-wide probability sample of 1030 adults, interviewed about gambling behaviour and problems and attitudes towards gambling and gambling policies in January-February 1995 (Ferris, Stirpe & Ialomiteanu, 1996), is used as a comparison control for the baseline community sample. Funding exigencies precluded the best choice for a "before" control sample, which would have been a new sample collected in late 1996. However, the 1995 sample is an adequate substitute, particularly to the extent province-wide patterns are stable in the 1995/1997 comparisons.

(5) A new province-wide probability survey of 1005 adults was interviewed in November and December 1997. The questionnaire was primarily composed of items about gambling and gambling related problems as well as some questions about experiences with casino gambling, gambling strategies and knowledge of the odds of winning. The primary purpose of the data from the new province-wide sample was as an "after" control for the Niagara comparisons. Trends in the provincial data from 1995 to 1997 will thus be used as a control, in comparison with trends from 1996 to 1997 in the Niagara samples, to estimate the specific effects of the casino opening in the intervention community.

Niagara Falls is, of course, a part of Ontario, and thus the intervention site is included

within the control site in this study. Comparisons of the two will thus tend to underestimate very slightly divergences in status and in trend. However, since the Niagara Falls population is about 0.7% of the population of the province as a whole, the effect of this on the study results is negligible.

Measures

Expectations and perceptions of the casino's effects. Niagara region respondents were asked 28 items in 1996 concerning their expectations about the effects of the casino's opening on the community. Factor analyses (Turner, Ialomiteanu & Room, 1998) found that responses on most of these items clustered on three factors: expectations about social problems and disruption, about environmental problems, and about economic and amenity benefits. In 1997, 25 of the items were repeated, but now asked in terms of the respondent's perception of what had actually happened in the community as a result of the casino's opening.

Gambling behaviours. There was some variation between samples in the lists of types of gambling asked about, reflecting the advent of additional types of gambling in the province between 1995 and 1997 and greater or lesser subdivision of types. For purposes of this analysis, eleven types of gambling were used (see Table 1), with results summarized into these eleven types as necessary. For each type of gambling, respondents were asked if they had engaged in that type in the previous 12 months, and, if so, how often they did so, and what their average monthly expenditure was for that type of gambling. Outliers were a problem with the expenditure data, because the outliers are in fact the gamblers that we are most interested in, deleting or modifying the outliers would distort the data. In order to determine differences but minimizing the effect of the outliers, the data were analysed using the natural log of each person's expenditure.

Respondents were classified as having gambled in a **non-charity casino** if they had done so one or more times in the past year. Respondents were counted as having participated in **gambling activities** if they had engaged in one or more of the ten types of gambling asked about on at least one occasion in the past year.

Gambling problems. Several different measures were used to gather converging evidence on rates of problem gambling in the community.

Short SOGS. The South Oaks Gambling Screen (SOGS) has been widely used in gambling problems research, but is quite long for use in a general-population telephone survey. The version of SOGS used in this study limits the questions to events in the past 12 months. From item analysis of the full list of SOGS items in the 1995 provincial survey, five items were selected for use in the Niagara study. A score based on these items (see Table 11) reproduced a respondent's full SOGS score in the 1995 provincial survey with 80% accuracy and also maximized correlations with life area problems, gambling participation, gambling expenditures, and DSM-IV gambling symptoms. All respondents that scored in the pathological range (5+ on full SOGS) scored 2 and above on the Short SOGS and all the people that scored 2 and above on the Short SOGS were in the problem area (3+) on the full SOGS. Thus a score of 2 on the Short SOGS indicates a possible problem or pathological gambler, however no distinction can be made between problem and pathological gamblers.

Gambling life-area problems. Respondents were asked whether they felt that

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their gambling had harmed each of five areas of their life in the past 12 months (see Table 11). These items, adapted from questions long used to measure alcohol problems (Cahalan, 1970), were first used concerning gambling in a 1994 Ontario population survey (Paglia, 1995; Smart and Ferris, 1996). Positive responses to two or more of these problems have commonly been taken as a indication of fairly severe problems.

Others' responses. Respondents were asked whether a family member or relative and whether a friend or acquaintance had said anything about the respondent's gambling on a lifetime basis, and in the last 12 months (Table 12). Positive responses were taken as an indirect indication of problematic gambling by the respondent.

Others' problems. Respondents were asked whether a family member and whether a friend had had a problem with gambling on a lifetime basis and in the last 12 months (Table 12). Responses on these items were taken as a indicator of the level of gambling-related problems in the community.

Demographics. A full range of demographic variables were asked. In the present analysis, gender, age category, marital status, education and income are used.

RESULTS

Levels of Gambling Involvement in Niagara Falls, 1996 and Ontario, 1995.

We start with a comparison of the Niagara Falls 1996 data and the Ontario 1995 data, to establish how much patterns and levels of gambling in Niagara Falls matched or diverged from the provincial average prior to the opening of the casino. Table 1 shows that, in terms of the ten different types of gambling, the behaviour of Niagara Falls residents was very close to the provincial average. This was true both in terms of the distribution of choice of types of gambling, and in terms of the actual prevalence of each type of gambling.

Table 2 gives the amount of money that the respondent reported spending in the past 30 days on gambling for each type. Amounts are given per-capita on a population basis, averaged across the entire sample. In general the pattern of spending in the Ontario and Niagara data is similar on most types of gambling. A notable exception is for charity casino gambling, due to the fact that the Ontario data includes two outliers who reported spending more than \$5000 in such casinos in the past 30 days. On average, Niagara Falls residents report spending a little more than the provincial average on instant and sports lottery tickets, and considerably more on horse-race betting (Fort Erie racetrack is nearby). On the other hand, on average they spend less on other sports betting, on cards and bingo, and notably on both types of casino. Overall, Niagara Falls residents in 1996 reported spending a little less than the provincial average on gambling.

Table 2's figures are of course averages, which are particularly influenced by a small number of heavier gamblers. Most respondents who gamble at all report that the amount they spend is within reasonable limits, with 93% reporting spending less than \$100 per month, and 94% reporting spending less than 5% of their income on gambling. However, expenditures range from \$0 to more than a thousand dollars in the past 30 days; a minority of respondents are spending a great deal on gambling.

Table 3 shows demographic variations in whether the respondent gambled at all in the

last 12 months. In both Niagara Falls and the province as a whole, about five-sixths of adults report having gambled during the last year. The percentage was slightly higher for males, although the difference was small. The highest percentages were found among the middle-aged, and those with lower to middle-range incomes. Overall, the demographic distribution of gambling at all was very similar in Niagara Falls and in the province.

Changes in General Attitudes to Gambling

We turn now to the question of change or stability in the wake of the coming of the Niagara casino. Table 4 shows that general attitudes to gambling stayed stable in Niagara Falls between 1996 and 1997. The casino's advent seems to have had no effect in this time period on the general disposition of the community towards gambling. In both years, a majority of respondents clearly recognize positive aspects of gambling. But two-thirds also see a downside: that it is "usually addictive". A stable one-quarter of the population rejects gambling more thoroughly, seeing it as immoral.

In contrast to the Niagara Falls results, there is some evidence in table 4 that in Ontario as a whole attitudes are turning somewhat less approving of gambling. A somewhat smaller proportion of respondents in 1997 than in 1995 gave positive responses to the three items concerning good things about gambling. Positive responses increased for one of the negative items ("is usually addictive"). The end result in 1997 was that provincial attitudes, which had been more favourable to gambling than attitudes in Niagara Falls, came closer to matching the attitudes in Niagara Falls.

The right-hand side of the table shows the results of tests of the significance of differences, using a 2x2 factorial analysis of variance on the full distribution of each item. On two positive-attitude items, the Ontario samples are significantly higher than the Niagara Falls samples ($p < .05$). On the same two items, and also on the item "gambling is immoral", agreement was significantly lower in 1997 than earlier, while agreement had risen in 1997 on the item, "gambling is usually addictive". For two positive items -- "socializing" and "exciting" -- there was a significant interaction, reflecting that agreement had dropped more in the Ontario samples than in the Niagara Falls samples.

Expectations and Experiences on the Effects of the Niagara Casino

Table 5 focuses on what Niagara Falls residents see as the effects of the casino on the community. Looking first at the data for 1997, we see that there is a wide perception (90%) of an increase in gambling addiction in the community (last item in 2a). On the other hand, relatively small percentages see some potential problems as having occurred -- only 16% think people have moved away because of the casino (first item in 2a), and only 18% perceive an increase in the proportion on welfare or other public assistance (third item; this result may also reflect general provincial reductions in the welfare rolls).

There is wide agreement (88%) on a perception that the number of jobs in the community has increased as a result of the casino (fifth item in 2b); about half the sample perceives that the average personal income of residents has increased (sixth item). But almost two-thirds of the sample perceive that most of the profit from the casino will go to outsiders, rather than stay in the community (first item in 2d). Only a third of the respondents see there having been an increase

in the variety of entertainment in the community (second item in 2b).

Traffic congestion is the most pervasive environmental problem perceived by Niagara Falls residents (first item in 2c); in concert with this almost everyone perceives the number of American visitors to have risen (eighth item in 2d).

Comparing expectations in 1996 with these perceptions of what actually happened, the general picture is that reality turned out to be less dramatic, both for good and for bad, than expected. The majority of the differences between rates for 1996 expectations and for 1997 experiences are statistically significant. While 77% had expected the number of serious crimes to increase, now only 44% perceive this as having happened (second item in 2a). The reality turned out less frightening than the expectations also for young people getting in trouble with the law, for family break-ups, and for people moving away (fifth, fourth, first items). Except for traffic congestion, expectations of environmental problems turned out to have been overblown: litter on the streets was much less often a problem in the event than had been expected (second item in 2c), and fewer had experienced higher noise levels and drunken disturbances in their neighbourhoods than had expected to do so (fourth and fifth items in 2c).

On the other hand, the reality was also often less dramatic than expected on the positive side. Fewer people thought that community amenities had improved and property values and business turnover increased than had expected these to happen (first to fourth items in 2b).

One item stands out as being worse in the eventuality than in the expectation. More people report that the number of people addicted to gambling have increased, compared to the already high proportion who expected this before the casino opened (last item in 2a). This change just fails to attain statistical significance ($p=.051$), however, when entered into a logistic regression, this item (along with several others) significantly differentiated the pre and post casino samples.

Change in Reported Employment among Niagara Falls Respondents

Table 6 gives a breakdown of the employment status of the residents of Niagara and the province. The data indicate a small increase in the proportion of adults in Niagara Falls working full time, and a reduction in the proportion unemployed or working part time.

In contrast, in the provincial sample there was very little change in the rates of full time, part-time and unemployed people. These data suggest that the change in employment rates in Niagara were specific to the city and not part of a general trend in the province.

These trends failed to reach statistical significance. However, since an increase in employment is one of the major rationales for opening the casino, we will use the survey results as a basis for estimating change in employment. There are approximately 60,000 adults residing in Niagara Falls. A 2.1% increase in the proportion of adults employed (49.7%-47.6%) would thus translate into approximately 1260 new jobs.

Respondents in 1997 were also asked if they had worked at the casino in the past year. Altogether 39 (3.6% of the sample) responded that they had. Among 60,000 adults, that would translate into 2160 people. The actual employment at the Casino is 3500 people, but this would include employees residing outside Niagara Falls suggesting that only 62% of the casino employees reside in Niagara.

The increase in employment reported by the respondents in the Niagara Falls surveys is

thus less than the reported direct employment in the casino. In the survey data, there is no evidence of any increase in indirect jobs due to the advent of the casino, although the casino has also been credited with creating "more than 6,000 jobs" in the Niagara region beyond the direct jobs in the casino (Government of Ontario, 1998). Data from Statistics Canada (Statistic Canada, 1998) also does not indicate any increase in employment in the Niagara-St. Catherine region.

There are a large number of factors that effect the employment rate. Perhaps, as the mayor of Niagara has suggested, the unemployment rate would have been much higher if the casino had not been opened (Gray, 1997). Another possible explanation for this missing indirect jobs is that direct and indirect employment due to the casino is to a considerable extent diverted from other economic activities, rather than simply added on to the local economy. Any new business or industry that is brought into a community contributes to the local economy. But some of the new business represents diversion from other economic activities: a person that might have spent \$100 on a restaurant dinner may instead spent that \$100 gambling. The diversion from restaurant spending translates into less restaurant employment. In the 1997 Niagara Falls survey, respondents were asked to estimate how much of the money spent at Casino Niagara they would have spent on entertainment, another form of gambling or necessities. A sample of 299 respondents provided usable diversion data (total amount of diversion did not add up to more than 100%). On average the respondents reported that 80% of the money spent at Casino Niagara was diverted from some other type of expenditure: entertainment, 62%, other forms of gambling, 11% and necessities of life 8%. Diversion might explain some of those missing indirect jobs.

Changes in Reported Gambling Behaviour

We turn now to respondents' reports of their own gambling behaviour. Table 7 compares the profile of types of gambling behaviour reported before and after the opening of the casino. The Niagara Falls results are very clear. The prevalence of engaging in other forms of gambling besides the casino has hardly changed at all between 1996 and 1997. But the proportion of the population which has gambled in a non-charity casino has changed radically.

The provincial comparison between 1995 and 1997 shows results similar to those for Niagara Falls, but the change in non-charity casino gambling is considerably more muted. The new casino gamblers may have been gambling in Niagara Falls, but by 1997 they had three other choices in the province, and many more outside.

Table 8 gives the amount of money that respondents reported spending on gambling in the past 30 days for the four samples, averaged across the entire sample. In general the 1996 and 1997 Niagara Falls data are similar on nearly all types of gambling except non charity casino gambling and bingo, which both showed an increase, and horse racing, which showed a decrease. According to discriminant function analysis, the 1997 results differed significantly from the 1996 results for non-charity casino gambling ($F=11.24$, $p<.01$) and horse racing ($F= 4.36$, $p<.05$), but no other type of gambling showed significant differences. Examination of the distribution of spending on bingo suggested that the reported change was attributable to a small number of outliers; for the rest of the samples, spending on bingo had not changed.

The average amount spent on gambling by Niagara Falls residents rose by 31% between 1996 and 1997, amounting to a rise of over \$10 per month. Almost all of this rise was accounted

for by the increase in expenditure on casino gambling. In 1997, casino gambling accounted for one-quarter of all gambling expenditures reported by Niagara Falls residents.

The trends in reported spending in Niagara Falls are mostly matched by those in the province as a whole. Reported expenditures on bingo and non-charity casinos went up. Expenditures on most other forms of gambling stayed about the same, except for an increase in horse racing expenditures, again reflecting responses by a few outliers.

The analyses of variance showed significant interactions for three types of gambling. Reported spending on 6-49 lottery tickets was reported down in the province but not in Niagara Falls; reported spending on horse race betting fell in Niagara Falls but rose in the province; and reported spending in non-charity casinos rose proportionally more in Niagara Falls than in the province. Table 8 gives the average dollar values so that the reader can get a sense of the total amount that Ontarians are spending on gambling in actual dollar values, however, this data is skewed with many people spending very little and a small number spending a large amount. Removal of outliers would be inappropriate since it is the outliers that we are most interested in. To solve the skewness and outlier problems, the statistical tests conducted on the expenditure data were first subjected to a natural log transformation ($x_{ln} = \ln(x+1)$) in order to remove the biasing effect of the skew in this data. In some cases this resulted in a shift in the relative size of means, however the means given in Table 8 give an accurate view of the pattern of the results. For non-charity casino expenditures the mean natural logs were .13 (.69) for Niagara 1996, .53 (1.35) for Niagara 1997, .11 (.74) for Ontario 1995 and .34 (1.22). The main effects and interaction are evident from both log means and raw means, but in the log data the Niagara residents are spending (non-significantly) more than the Ontario residents.

In Table 9 we revisit the demographics of gambling at all to examine trends over time. Rates of gambling overall have remained constant. There is little sign that at this most general level, the demographic profile of gambling in the Niagara Falls population has changed at all.

In contrast, Table 10 shows the demographics of non-charity casino gambling. In the province as a whole, the proportion of adults gambling at all in casinos has almost doubled. As stated above this interaction is significant. The increase is widely spread across all demographic categories, with relatively little variation by demographics. The increase has been even more dramatic in Niagara Falls; the proportion of the population gambling in a casino in 1997 is almost four times what it was in 1996. The increase is particularly strong among the young, the non-married, and the less affluent. Prior to the opening of the local casino, casino gambling was more or less limited to the relatively well-off in Niagara Falls, but losing money at the tables has become more of an equal-opportunity proposition.

Changes in Reported Rates of Problems from Gambling.

As noted earlier, we used several sets of variables as indicators of rates of gambling problems in the community, as reported by respondents both concerning their own gambling and concerning the gambling of those around them.

Short SOGS. Results for the five items of the Short SOGS measure are shown in Table 11. The proportion of positive responses increased on all five of these items between 1996 and 1997. There was an increase of 2.4 percentage points in the proportion responding positively to one or more item, and of 1.9 percentage points in the proportion responding positively to two or

more. The rate of those reporting two or more problems thus increased by about three-quarters. The average number of positive responses in the 1996 sample was $x=.131$, and $x=.198$ in 1997 -- an increase of about one-half. This difference is significant ($t(1719)=2.54, p<.05$). The average number of problems in the province as a whole in 1997 was $x=.139$, which is very similar to the 1996 Niagara data, and significantly smaller than the 1997 Niagara data ($t(2104)=-2.47, p<.05$). This suggests that the increase found in the city of Niagara was isolated to that city and not found across the rest of the province.

Unfortunately, data for problems in the past year for the reduced SOGS was not available from the 1995 data. However, lifetime data for these questions was available in the 1995 provincial survey. There was no significant difference between the lifetime data in the Province in 1995 and the Province in 1997 ($t(2033)=.38, ns$); the proportion reporting 2 or more problems in 1995 was 5.8% and in 1997 5.7%. This result from lifetime data strongly suggests that problem gambling measured by the Short SOGS did not increase in the province as a whole, while it increased significantly in Niagara Falls.

Life-area problems items. Reported rates of problems in five life-areas due to gambling also uniformly increased in Niagara Falls between 1996 and 1997, however these changes were small and non-significant ($t(1705)=1.0, ns$; see Table 12). The provincial data shows a decrease in the average number of life area problems reported, but this is also non-significant ($t(2033)=.41, ns$). The interaction was non-significant.

Pressure from others on gambling. Table 13 shows the proportions of the samples that report family members or friends have said something to them about their gambling, or suggested that they cut down, both on a lifetime basis (first two items) and in the past 12 months (fifth and sixth items). Rates of positive responses increased in Niagara Falls for all 4 of these items, though none of the increases were statistically significant. Combining friends and family together in terms of the last 12 months (seventh row), the proportion which have been talked to about their gambling did increase significantly, from 1.6% in 1996 to 3.3% in 1997 ($\chi^2=4.29, p<.05$). In contrast, the province-wide data shows if anything a decrease in the proportion of respondents to whom either a family member or friend said something. This difference failed to reach significance ($\chi^2=2.9, p=.08$). The interaction between site and year, tested on the combination of friends and family, was significant.

Interestingly, the entire increase in these indicators in Niagara Falls on a lifetime basis (first two rows) can be attributed to change in the past year (fifth and sixth rows). While both lifetime and past year measures increased, the difference between the two -- the rate of past gambling problems (lifetime but not current) -- stayed stable.

The interaction term for a family member or relative saying anything was significant when tested using logistic regression both for lifetime and for the last 12 months, reflecting the contrary trends of a rising rate in Niagara Falls and a falling rate in the province as a whole.

Gambling problems in the family and among friends. The study also included information on the respondent's experience with others' gambling problems (rows 3-4, 8-10 in Table 13). Responses to these questions cannot be used to estimate prevalence rates of gambling problems in the community, since there may be many family members or friends aware of and concerned about a single pathological gambler. However, changes in rates of respondents with family or friendship links to those with gambling problems are a useful indicator of how the

prevalence of gambling problems is changing in the community.

Experience with other people's gambling problems followed a very similar pattern to the data on pressure from others, although at considerably higher rates. There was an increase in both lifetime and past year answers in the Niagara Falls comparisons, but no change in the difference between rates for the lifetime and for the past year. Combining friends and family together (last row in Table 13), the number of people that report either a friend or family member had a gambling problem in the last 12 months increased significantly from 16.6% in 1996 to 24.6% in 1997 ($\chi^2 = 16.0$, $p < .01$) -- an increase of almost one-half in the rate of respondents reporting this.

The rate of respondents reporting that a family member or friend ever had a gambling problem did not change in the province-wide samples (rows 3 and 4). These items were not asked for the last 12 months in a comparable way in the 1995 provincial sample.

In 1997, the rate of family and friend problems in the last 12 months was lower in the province than in Niagara Falls. Indeed, the rates in the 1997 province-wide data are very similar to the rates in the 1996 Niagara Falls data, from before the casino opened.

In summary, there were several findings which provided converging evidence for an increase in gambling-related problems in the Niagara region. In all, there are 18 items in tables 11-13, that we used to measure gambling problems; for all 18 of them, the rate in the 1997 Niagara Falls sample is higher than in the 1996 Niagara Falls sample. If these were fully independent observations, the chances that 18 comparisons would all fall the same way on a random basis are 1 in 262,144. Since the same respondents are answering each of the 18 questions, this calculation overestimates the unlikelihood of this result. But it underlines the finding that there is strong evidence in the data from this study that the rates of gambling-related problems rose in Niagara Falls in the year after the opening of the casino, and that this rise is highly likely to be greater than any rise in problem rates in the province as a whole.

CONCLUSIONS

The Niagara Falls casino was built on the border with the U.S., with the explicit goal of attracting gamblers from the U.S. In the jargon of the gaming industry, it is a "destination" casino, designed to attract customers from elsewhere, and not simply dependent on local trade. The observations of respondents in our study support data from other sources in concluding that the Niagara casino has been successful in this goal: 97% of the sample considered that "the number of Americans who visit" Niagara Falls had increased because of the casino.

In evaluating costs and benefits, the balance sheet for a community which hosts a "destination casino" will be different from that for a community with a casino primarily serving local customers. For a community with a destination casino, there is the hope of attracting increased commerce, revenue, and employment, offset only by the minor inconvenience and environmental troubles related to crowding, traffic congestion and parking problems. This would be the situation if all the gamblers in the casino were from elsewhere. As events in North America are showing, this policy of making money by attracting tourists to a casino, tends to work only in the short-term. Neighbour cities tend to build counterattractions to win the commerce, revenue, and employment back to their side of the river. As an example, the Windsor casinos have precipitated plans to build three casinos in Detroit.

Apart from that, the data from the present study show clearly that the casino's customers are not limited to those from out of town. The proportion of Niagara Falls residents who had engaged in casino gambling during 1996 was 11%; one year later the proportion was 43%. The average amount the sample as a whole reported spending in non-charity casinos in that year quadrupled, from \$2.30 in a month to \$11.10. Some of this extra spending came at the expense of other forms of gambling, notably horse racing. But most of it appears to have come as a diversion from other expenditures such as entertainment that would have been made in the community.

In terms of reported employment in the community, data from our Niagara Falls respondents do show a gain. There are jobs in the community directly attributable to building and operating the casino. But our data suggest that the main gains in employment and commerce are at this direct level. There is little evidence on a net basis of the secondary, pass-along gains that are projected in conventional models of the economic impact of opening a casino. The pattern of our respondents' gambling expenditures suggest what is likely to be going on. Gambling losses at the casino by local residents quietly subtract from other parts of the local economy, in terms of other expenditures forgone, and this effect more or less cancels out the added employment and commerce from visitors' meals, stays at motels, etc. This implies that it is not clear that a neighbourhood gaming club or casino, as opposed to a destination casino attracting substantial out-of-area clientele, would make any net addition to the local economy.

When questioned just before the casino's opening, Niagara Falls respondents had vivid expectations about its effects. Strong majorities expected not only increases in the number of jobs, but also improvements in the variety of entertainment, stores and services in the community. On the other side of the balance, strong majorities expected an increase in serious crimes, in public disturbances and in noise levels and crowding in the community, as well as an increase in the level of traffic congestion. After a year of actual experience, the picture is more in shades of grey. The expectations of more jobs and more traffic congestion were borne out, according to the residents' perceptions, but much smaller proportions reported each of the other effects, good or bad.

The effects so far mentioned are all fairly publicly visible. A casino also has potential effects more in the area of private life, in the family or in individual pleasure or despair. A strong majority of respondents had expected an increase in the number of people who become addicted to gambling in the wake of the casino. A year later even more respondents (90%) saw this as a reality. Respondents' attitudes to gambling in general showed no net change, but they were very clearly aware of this downside to the casino.

Our data on changes in actual gambling behaviour and the experience of problems in general bear out the respondents' perceptions. The amount Niagara Falls respondents reported spending on gambling did increase, with most of the increase from spending in the type of gambling (non-charity casinos) which includes the Niagara casino. There were increases in rates on each of the five items from a short pathological-gambling scale, and the proportion of the sample with a 2+ score on these items rose from 2.5% to 4.4%, which could translate into 1140 more individual with gambling problems. There were also rises in prevalence on each of a separate set of five items about problems in different life-areas from gambling; the proportion reporting problems in 2+ life-areas also rose, though not significantly, from 1.2% to 1.6%.

About twice as many respondents in 1997 as in 1996 reported that a family member or a friend had pressured them to cut down their gambling in the previous twelve months.

Given the restricted sample sizes, only some of these results are significant at the 5% level. But the cumulative effect is highly significant. We can state with considerable confidence that rates of self reported gambling-related problems rose among Niagara Falls residents in the wake of the opening of the casino.

These results are also supported by data on the proportion of respondents reporting they have family members or friends with problems with gambling in the last 12 months. The proportions reporting this rose from 5.0% to 7.5% for family members, and from 14.0% to 20.5% for friends. This rise in the proportions reporting gambling problems in the family or among friends was highly significant.

The casino has thus clearly brought problems to the Niagara Falls community; it has particularly brought problems in the arena of private life, behind curtains rather than out on the street. Despite this, Niagara Falls residents remain firm in their support for the casino. In fact, the proportions supporting the casino rose a little. After a year of experience, three-quarters of the residents approved of the Niagara casino being there.

There is, of course, no substitute for actual experience in evaluating the effects of an initiative like the opening of the Niagara casino. But the results we have reported still represent a relatively early stage in the community's response to the Niagara casino. It is possible that there will be some differences in the effects in the longer term. Perhaps, these longer-term effects may be tilted towards the negative side, or the effects reported here may merely represent a one time jump in the prevalence while the community adjusts to the new casino. There will certainly be some remissions among those with gambling problems, but on the other hand a pathological gambling trajectory often takes several years to build up in an individual's life. There may thus be a further rise in rates of gambling-related problems among community residents. Competing casinos across the border and elsewhere in Ontario are likely to cut into the tourist trade of the Niagara casino, which is the source of the most unambiguous gains to the community. On the other hand, the casino is now a social reality in the community, and it will garner some support from those who tend to support the status quo. It would be worthwhile to observe how trends in community benefits, problems and perceptions unfold in the longer term.

There are limitation to these findings. For example, there is no way of knowing if the problem gambling behavior measured here, will translate into pathological gambling. Furthermore, it is impossible from a single study, 1 year after the casino has opened to determine if the increase in problem gambling behavior will be sustained, increase or disappear in subsequent years.

Perhaps the most important implication of these data is the indication that more needs to be done to prevent the development of gambling problem. The majority of people that gamble do so without experiencing gambling problems, however, the increased availability of casino gambling does appear to be related to an increase in problems. Turner & Ialomiteanu, (1998) found correlations between gambling strategies and gambling problems. Gambling problems were related to larger amounts spent gambling, the belief that you are lucky, use of systems, not sticking to a limit, playing until closing time, and not quitting when tired. In general these findings are consistent with clinical data and with computer simulation data of gambling systems

(Turner, 1998). The findings reported here, point to the importance of informing the public about potentially harmful and addictive strategies of play.

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Table 1. Percentage Participating in Specific Types of Gambling During the Past 12 Months - Adults (18+), Niagara Falls, 1996 and Ontario, 1995

Type of Gambling Activity (last 12 months)	Niagara Falls (1996) %	Ontario (1995) %
Instant Lottery tickets	57	53
Sports Lottery tickets	11	9
6-49 Lottery tickets	70	68
Hospital Lottery	2	(NA)
Bingo	13	15
Horse Races	10	8
Charity Casino	6	4
Casino (non-charity)	11	12
Cards	12	15
Video Lottery	3	2
Sports	15	19
Ns - Total sample	677	1030

Table 2. Average Monthly Gambling Expenditures Per Respondent - Adults (18+), Niagara Falls, 1996 and Ontario, 1995

Type of Gambling Activity (last 12 months)	Average amount spent last 30 days	
	\$ Niagara Falls (1996) (N=677)	\$ Ontario (1995) (N=1030)
Instant Lottery tickets	6.0	4.8
Sports Lottery tickets	3.4	2.1
6-49 Lottery tickets	9.5	10.3
Hospital Lottery	1.8	(NA)
Bingo	3.8	5.2
Horse Races	4.8	1.9
Charity Casino*	0.7	8.0
Casino (non-charity)	2.3	5.9
Cards	1.6	3.5
Video Lottery	0.2	0.3
Sports	2.1	4.7
Average amount spent on all gambling (\pm SD)	35.9 (\pm 86.8)	46.9 (\pm 230.2)

*Two Ontario respondents in 1995 declared spending \$5000 on charity casino gambling activity in the last 30 days.

Table 3:

Percentage Participating in Gambling Activities During the Past 12 Months, by Demographic Characteristics, Adults (18+), Niagara Falls, 1996 and Ontario, 1995

	Niagara Falls 1996 (677)	Ontario 1995 (1030)
Total sample	87	85
±% ^a	(±2.5)	(±2.2)
Gender		*
Male	88	87
Female	86	82
Age		**
18-29	88	87
30-39	90	86
40-49	91	88
50-64	86	81
65+	76	73
Marital Status		
Never married	85	87
Married	90	84
Previously married	84	85
Education		
Less than High School	82	85
Completed High School	90	86
Some College or University	89	86
University Degree	87	79
Income		
< \$30,000	81	81
\$30,000 - \$49,000	91	86
\$50,000 - \$79,000	90	86
\$80,000 +	85	89
Not Stated	86	80

Notes:

Asterisks in shaded rows indicate the significance of a chi-square test of association between gambling activities and that demographic: * $p < .05$; ** $p < .01$; *** $p < .001$.

^a 95% confidence interval.

Table 4. Attitudes Toward Gambling in General, Niagara Falls 1996-1997, and Ontario 1995-1997, Adults (18+): Percentage agreeing with statement

Gambling ...	Percentage agreeing ¹ with statement (%)				Tests of significance		
	Niagara Falls 1996 (N=677)	Niagara Falls 1997 (N=1076)	Ontario 1995 (N=1030)	Ontario 1997 (N=1005)	Ontario (vs. Niagara)	1997 (vs. earlier)	Interaction
Provides an opportunity for friendly socializing (agree)	57	54	76	63	↓	↓	✓
Is immoral (agree)	29	26	29	26		↓	
Is a good way for a person to take a little risk now and then (agree)	66	65	76	70	↓	↓	
Is usually addictive (agree)	66	68	63	71		↓	
Is exciting (agree)	82	83	80	80			✓
Ns - Total Sample	677	1076	1030	1005			

Notes: ↓ and ↓ indicate a difference significant at $p < .05$ in the direction indicated. Thus, in the first cell under "tests of significance", the Ontario samples taken together are significantly higher than the Niagara Falls sample (i.e., more in agreement with the item, "provides an opportunity for friendly socializing"), while in the second cell in that row, the 1997 samples taken together are significantly lower than the earlier samples.

✓ indicates an interaction significant at $p < .05$, reflecting a significantly different time-trend between the sites; in the case of the cell at the far right of the top row, agreement with this item fell more in Ontario than in Niagara Falls.

Tests are with a 2 x 2 factorial analysis of variance on the full distribution of each attitude item

¹ Per cent responding 'somewhat agree' or 'strongly agree' as opposed to "somewhat disagree" or "strongly disagree".

Table 5. Opinions About the Effect of the Opening of the Casino, Niagara Falls 1996 (expectations) and 1997 (experiences)

Questions	Niagara Falls 1996 (N=677)	Niagara Falls 1997 (N=1076)
1. Approval of the Casino		
The casino to be opened soon in Niagara Falls (approve) ^a	73	76
A casino is a good idea for the Niagara Region (agree) ^b	75	77
2. Expectations/Experiences concerning the Casino – Community Impacts		
2a. Expected/Perceived Social Problems and Disruption		
People who live in Niagara Falls will move away because of the casino (agree)	28	16 *
The number of serious crimes (increase) ^d	77	44 *
The number of people on welfare or other social assistance (increase)	24	18
The number of marriages and families breaking up (increase)	50	42 *
The number of young people who will be in trouble with the law (increase)	63	35 *
The number of people who become addicted to gambling (increase)	87	90
2b. Expected/Perceived Economic and Amenity Benefits		
The variety of stores and services (increase)	85	64 *
The variety of entertainment (increase)	87	39 *
Property values (increase)	66	46 *
The amount of money going to stores and local businesses (increase)	84	65 *
The number of jobs (increase)	93	88 *
The average personal income of residents (increase)	56	49 *
2c. Expected/Perceived Environmental Problems		
The level of traffic congestion (increase)	98	88 *
The amount of litter on the streets and lawns (increase)	59	17 *
The size of crowds in public places (increase)	90	64 *
The noise levels (increase)	71	32 *
Disturbances caused by people who have been drinking (increase)	72	31 *
2d. Other Expectations/Experiences		
Most of the profits of the casino will go to outsiders (agree)	50	62 *
The more opportunities people have to gamble, the more they will gamble (agree)	71	73
Because of the casino, the kinds of tourists visiting the Niagara Region will change (yes) ^e	65	58 *
A job in the gambling industry is as good as any other job	78	79
The cost of goods and services (increase)	63	30 *
The availability of parking (decrease) ^f	48	38
The amount of time people spend volunteering in the community (decrease)	19	22
The number of Americans who visit (increase)	98	97
Household income will change because of the opening of the casino (will go up)	18	11 *
Ns - Total Sample	677	1076

Notes to Table 5:

Note: Missing data (i.e. "don't know" responses and refusals) were excluded from analyses.

^a Per cent responding "somewhat approve" or "strongly approve" as opposed to "somewhat disapprove" or "strongly disapprove".

^b Per cent responding "somewhat agree" or "strongly agree" as opposed to "somewhat disagree" or "strongly disagree".

^c Per cent responding "yes" versus "no".

^d Per cent responding "a large increase" or "a small increase" as opposed to "no change", "a small decrease" or "a large decrease".

^e Per cent responding "a large decrease" or "a small decrease" as opposed to "no change", "a small increase" or "a large increase".

* difference significant by t-test on means of full distributions, p<.01.

Table 6. Reported Employment Status, Niagara Falls, 1996-1997, and Ontario, 1995-1997.

Employment Status	% Niagara Falls 1996	% Niagara Falls 1997	% Ontario 1995	% Ontario 1997
Full Time	47.6	49.7	53.6	52.7
Part Time	13.7	13.3	10.6	9.7
Sick leave	0.7	0.6	0.4	0.5
Unemployed	4.0	6.2	4.3	4.2
Retired	15.7	15.0	9.3	13.6
Homemaker	4.9	5.6	0.4	5.9
Student	5.2	4.9	10.6	8.7
Other	4.0	4.2	3.2	4.5
Missing	4.9	0.5	0.4	0.3
Ns - Total Sample	677	1076	1030	1005

Date	Time	Location	Weather	Remarks
1901	Jan 1	New York	Clear	Left at 10 AM
1901	Jan 2	New York	Clear	Arrived at 5 PM
1901	Jan 3	New York	Clear	Departed at 8 AM

Table 7. Percentage Participating in *Specific Types of Gambling* during the past 12 Months - Adults (18+), Niagara Falls, 1996-1997 and Ontario 1995-1997

Type of Gambling Activity (last 12 months)	Niagara Falls (1996) (%)	Niagara Falls (1997) (%)	Ontario (1995) (%)	Ontario (1997) (%)	Tests of Significance		
					Ontario (vs. Niagara)	1997 (vs. earlier)	interaction
Instant Lottery tickets	57	52	53	49			
Sports Lottery tickets	13	11	9	7			
6-49 Lottery tickets	70	69	68	66			
Hospital Lottery tickets	24	22	(NA)	27			
Bingo	13	12	15	14			
Horse Races	10	7	8	8			
Charity Casino	6	4	1	5	↓		✓
Casino (non-charity)	11	43	12	22		↓	✓
Cards	12	8	10	10		↓	
Video Lottery	↓	1	2	2		↓	
Sports		14	14	12			
Ns - Total sample	677	1076	1030	1005			

Notes: ↓ and ↑ indicate a difference significant at $p < 0.05$ in the direction indicated. Thus, for "casino (non-charity)", the difference between the Niagara falls sample and the Ontario samples taken together is non-significant, while the ↑ indicates that the 1997 samples taken together show a significant rise compared to the earlier samples. ✓ indicates an interaction significant at $p < 0.05$, reflecting a significantly different time-trend between the sites; in the case of non-charity casinos, that the percentage participating in Niagara Falls rose significantly more than the percentage participating in the province.

Tests are with a logistic regression on each gambling activity, with site and year and an interaction term as predictors.

Table 8. Average Monthly Gambling Expenditures Per Respondent - Adults (18+), Niagara Falls, 1996 - 1997 and Ontario, 1995-1997

Type of Gambling Activity	Average amount spent last 30 days					Significance tests		
	\$ Niagara Falls (1996) N=677	\$ Niagara Falls (1997) N=1076	\$ Ontario (1995) N=1030	\$ Ontario (1997) N=1005	Ontario(vs. Niagara)	1997 (vs. earlier)	Interaction	
Instant Lottery tickets	6.0	5.6	3.4	4.4	↓	↓		
Sports Lottery tickets	3.4	2.2	2.1	4.4	↓			
6-49 Lottery tickets	9.5	9.6	10.3	7.9		↓	✓	
Hospital Lottery	1.8	1.5	0.00	2.3				
Bingo	3.8	8.7	5.2	9.4				
Horse Races	1.9	1.0	1.9	10.1			✓	
Charity Casino*	0.7	0.5	1.9	2.5				
Casino (non-charity)	2.3	11.1	5.9	14.5	↑	↑	✓	
Cards	1.6	2.2	3.5	2.4	↑			
Video Lottery	0.2	0.3	0.3	0.7				
Sports	2.1	2.1	4.7	2.2		↓		
Average amount spent on all gambling (±SD)	35.9 (± 86.8)	44.8 (± 167.3)	46.9 (± 230.2)	57.3 (± 304.2)	↑			

*Two charity casino gamblers in 1995 declared spending \$5000 on this type of gambling activity in the last 30 days.

Notes: ↓ and ↑ indicate a difference significant at $p < 0.05$ in the direction indicated. Thus, for "casino (non-charity)", the amount spent in the Ontario samples was significantly higher than in the Niagara Falls samples, and the amount spent in 1997 was significantly higher than earlier.
✓ indicates an interaction significant at $p < 0.05$. The check mark indicates a significantly different time-trend between the sites; in the case of non-charity casinos, that the proportional rise in spending in Niagara Falls was greater than in Ontario as a whole.

Tests are with 2 x 2 factorial analysis of variance on the natural log of each person's expenditure which is less sensitive to the effects of outliers.

Table 9: Percentage Participating in Gambling Activities , During the Past 12 Months, by Demographic Characteristics, Adults (18+), Niagara Falls, 1996-1997 and Ontario, 1995-1997

	Niagara Falls 1996 (677)	Niagara Falls 1997 (1076)	Ontario 1995 (1030)	Ontario 1997 (1005)
Total sample ±% ^a	87 (±2.5)	87 (±2.0)	85 (±2.2)	84 (±2.3)
Gender			*	**
Male	88	88	87	87
Female	86	86	82	80
Age	*	***	**	***
18-29	88	87	87	84
30-39	90	90	86	86
40-49	91	90	88	81
50-64	86	92	81	89
65+	76	71	73	67
Marital Status				
Never married	85	85	87	81
Married	90	88	84	84
Previously married	84	86	85	87
Education				*
Less than High School	82	85	85	85
Completed High School	90	89	86	84
Some College or University	89	89	86	87
University Degree	87	85	79	78
Income	*	**		*
< \$30,000	81	81	81	76
\$30,000 - \$49,000	91	87	86	81
\$50,000 - \$79,000	90	92	86	87
\$80,000 +	85	92	89	87
Not Stated	86	84	80	84

Note: Asterisks in shaded rows indicate the significance of chi-square tests of association between gambling activities and that demographic: * p<.05; ** p<.01; *** p<.001.

^a 95% confidence interval.

Table 10: Percentage Participating in Non-Charity Casino Gambling During the Past 12 Months, by Demographic Characteristics, Adults (18+), Niagara Falls, 1996-1997 and Ontario, 1995-1997

	Niagara Falls 1996 (677)	Niagara Falls 1997 (1076)	Ontario 1995 (1030)	Ontario 1997 (1005)
Total sample ±% ^a	11 (±2.4)	43 (±3.0)	12 (±2.0)	22 (±2.6)
Gender				*
Male	13	42	12	25
Female	9	43	11	19
Age		***		
18-29	10	52	12	23
30-39	14	46	9	24
40-49	12	46	16	21
50-64	10	37	11	23
65+	9	21	7	14
Marital Status		**		
Never married	10	51	12	20
Married	13	42	11	22
Previously married	8	37	13	23
Education	**	**		
Less than High School	9	35	11	17
Completed High School	8	40	9	21
Some College or University	17	49	12	25
University Degree	10	45	14	20
Income	**	***	*	**
< \$30,000	6	34	5	12
\$30,000 - \$49,000	8	42	12	21
\$50,000 - \$79,000	13	54	13	25
\$80,000 +	20	49	15	27
Not Stated	19	33	11	20

Note: Asterisks in shaded rows indicate the significance of chi-square tests of association between non-charity casino gambling and that demographic: * $p < .05$; ** $p < .01$; *** $p < .001$.

^a 95% confidence interval.

Table 11. Percentage Experiencing Gambling-Related Problems During the Past 12 Months (Short SOGS), Adults (18+), Niagara Falls, 1996 - 1997 and Ontario, 1997

Gambling-related problems - Short SOGS (last 12 months)	Niagara Falls 1996 (N= 677)	Niagara Falls 1997 (N= 1076)	Ontario 1997 (N=1005)
You gambled more than you intended to	8.2	9.0	6.9
People have criticized your gambling	1.0*	2.8	3.1
Money arguments have centred on your gambling	0.5	1.6	0.3*
You have felt guilty about the way you gamble or what happens when you gamble	2.4*	5.0	3.0*
You have claimed to be winning money gambling when you were not	0.9	1.4	0.6*
One or more problems	9.6	12.0	10.1
Two or more problems	0.5	4.4	2.9
<i>Average number of problems (\pmSD)</i>	<i>0.131* (\pm0.461)</i>	<i>0.198 (\pm0.640)</i>	<i>0.140* (\pm0.469)</i>

* significantly lower than Niagara Falls 1997.

Note: Significance of items tested using chi-square, average number of problems testing using t-tests.

Table 12. Percentage Experiencing Gambling-Related Harms During the Past 12 months (Life Areas Problems Measure), Adults (18+), Niagara Falls, 1996-1997 and Ontario, 1995-1997.

Past 12 months gambling harmful to:	Niagara Falls 1996 (N=677)	Niagara Falls 1997 (N=1076)	Ontario 1995 (N=1030)	Ontario 1997 (N=1005)
Friendships or Social Life	1.6	2.0	1.5	1.4
Physical Health	0.7	1.3	0.5	0.8
Home Life	0.7	1.3	0.5	1.4
Work, Studies	0.5	0.6	0.5	0.7
Financial Position	2.4	2.7	4.8	2.5
One or more harms reported	3.9	3.7	5.8	3.5
Two or more harms reported	1.2	1.6	1.4	1.4
<i>Average number of harms (\pmSD)</i>	<i>0.060 (\pm0.347)</i>	<i>0.079 (\pm0.484)</i>	<i>0.078 (\pm0.365)</i>	<i>0.068 (\pm0.435)</i>

Note: The only difference or interaction to reach significance ($p < .05$) is "financial position", with the Ontario samples taken together higher than the Niagara Falls samples. Significance of items tested using chi-square, average number of problems testing using t-tests.

Table 13. Percentage Reporting Help Suggested for Gambling and Experience with Others' Gambling Problems During Their Lifetime and the Past 12 Months, adults (18+), Niagara Falls, 1996- 1997, and Ontario, 1995-1997

Help suggested for gambling/ Experience with others' gambling problems	Niagara Falls 1996 (N= 677)	Niagara Falls 1997 (N= 1076)	Ontario 1995 (N=1030)	Ontario 1997 (N=1005)	significance tests	
					Ontario (vs. Niagara)	1997 (vs. earlier)
Lifetime						
Has a family member or relative ever said anything to you about your gambling?	1.7	2.8	2.8	1.6		✓
Has a friend or an acquaintance ever said anything about your gambling?	1.2	2.0	0.8	1.5		
Has a family member ever had problems with gambling?	11.7	13.8	10.6	10.5		
Has any friend ever had a problem with gambling ?	20.2	26.1	19.5	20.8		†
Last 12 months						
Has a family member or relative said anything about your gambling in the last 12 months?	1.3	2.5	2.1	1.2		✓
Has a friend or an acquaintance said anything about your gambling in the last 12 months?	0.9	2.0	2.8	1.1		
Either a family member or a friend said anything	1.6	3.3	2.7	1.8		†
Has a family member had problems with gambling in the last 12 months?	5.0	7.5	NA	5.1		
Has any friend had a problem with gambling in the last 12 months?	14.0	20.5	NA	12.2		
Either a family member or a friend had a problem	16.6*	24.6	NA	15.9*		

Notes: † and † indicate a difference significant at $p < .05$ in the direction indicated. Thus, for "either a family member or friend said anything" in the last 12 months, there is no significant difference between the Ontario and Niagara Falls samples, and the proportions answering positively are significantly greater in 1997 than earlier.

✓ indicates an interaction significant at $p < .05$, reflecting a significantly different time-trend between the sites; in the case of "either a family member or friend said anything" in the last 12 months, the rising trend in Niagara Falls significantly differs from the falling trend in the Ontario samples.

Tests in the first seven rows are with a logistic regression on each item, with site and year and an interaction term as predictors.

* Niagara Falls 1997 significantly higher than this sample ($p < .05$, χ^2).

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